

Software Product Description

PRODUCT NAME: FORTRAN IV/RSX, Version 2.6

SPD 14.63.10

DESCRIPTION

FORTTRAN IV is an extended implementation of the FORTRAN language based on the ANSI FORTRAN, X3.9-1966 standard. It operates under the RSX-11M and RSX-11M-PLUS Operating Systems. The PDP-11 FORTRAN IV language includes the following extensions of the ANSI 1966 standard:

- General expressions allowed in all meaningful contexts
- Mixed-mode arithmetic
- BYTE data type for character manipulation
- ENCODE, DECODE statements
- PRINT, TYPE, ACCEPT input/output statements
- Direct-access unformatted input/output, DEFINE FILE statement
- Comments allowed at the end of each source line
- PROGRAM statement
- OPEN and CLOSE file access control statements
- List-directed input/output

Additional virtual arrays are supported on systems with memory management directives. Virtual arrays are memory-resident and require enough main memory to contain all elements of all arrays.

The PDP-11 FORTRAN IV compiler is a fast, one-pass compiler. Compiler options allow program size versus execution speed (threaded code vs. in-line code) tradeoffs. FORTRAN IV compiler optimizations include:

- Common subexpression elimination
- Local code tailoring
- Array vectoring
- Optional in-line code generation for integer and logical operations

MACRO-11 assembly language subroutines can be called from FORTRAN IV programs.

FORTTRAN IV can optionally generate code for the following arithmetic instructions sets:

- EIS
- FIS
- EAE
- FPU

Object Time System

FORTTRAN IV includes a set of object modules, called the Object Time System (OTS), that is selectively linked with compiler-produced object modules to produce an executable program.

MINIMUM HARDWARE REQUIRED

Any valid RSX-11M or RSX-11M-PLUS Operating System configuration with at least 16K bytes of memory available to the FORTRAN compiler.

EIS hardware is required for virtual arrays.

OPTIONAL HARDWARE

In addition to standard hardware options, the following arithmetic hardware options are available:

- KE11-B Extended Arithmetic Element
- KEV11 Extended Arithmetic Chip

The FORTRAN IV OTS additionally supports the FP11 floating point processor.

PREREQUISITE SOFTWARE

RSX-11M or RSX-11M-PLUS Operating System

Refer to the RSX-11M and RSX-11M-PLUS Optional Software Cross Reference Tables (20-98-xx and 20-99-xx) for the required versions.

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product. There is no additional charge. This software product is warranted to conform to the Software Product Description (SPD). This means that DIGITAL will remedy any nonconformance when it is reported to DIGITAL by the customer during the warranty period.

The warranty period is ninety (90) days. It begins when the software is installed or thirty (30) days after delivery to the end user, whichever occurs first, and expires ninety (90) days later or one hundred eighty (180) days after release of a subsequent version of the software.

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Warranty Service

DIGITAL provides software warranty service worldwide. Service is provided in the country of purchase and is not transferable between countries.

DIGITAL will provide a service location which will accept reporting (in a format prescribed by DIGITAL) of a nonconformance problem caused when using the licensed software under normal conditions as defined by the SPD. DIGITAL will respond to a nonconformance problem in the current unaltered release of the licensed software by issuing correction information such as: correction documentation, corrected code, or notice of availability of corrected code, or a restriction or a bypass. The customer will be responsible for the preparation and submission of the problem report to the service location.

Warranty Exclusion

DIGITAL DOES NOT WARRANT THAT THE SOFTWARE LICENSED TO CUSTOMER SHALL BE ERROR FREE. THAT THE SOFTWARE SHALL OPERATE WITH ANY HARDWARE AND SOFTWARE OTHER THAN AS SPECIFIED IN THIS SPD. THAT THE SOFTWARE SHALL SATISFY CUSTOMER'S OWN SPECIFIC REQUIREMENTS, OR THAT COPIES OF THE SOFTWARE OTHER THAN THOSE PROVIDED OR AUTHORIZED BY DIGITAL SHALL CONFORM TO THE SPD.

DIGITAL MAKES NO WARRANTIES WITH RESPECT TO THE FITNESS AND OPERABILITY OF MODIFICATIONS NOT MADE BY DIGITAL.

IF THE SOFTWARE FAILS TO FUNCTION FOR REASONS STATED ABOVE, THE CUSTOMER'S WARRANTY WILL BE INVALIDATED AND ALL SERVICE CALLS WILL BE BILLABLE AT THE PREVAILING PER CALL RATES.

INSTALLATION

This software product can be installed by the customer using the step by step documentation available for this product. Optionally, you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

DIGITAL's installation Services can be purchased as a separate service.

Courtesy Installation Service

This software product will be installed by DIGITAL at no additional charge if you purchase Installation Service for the host operating system and you install both software products concurrently.

ORDERING INFORMATION

DIGITAL provides a wide range of material and service options supporting this software product. Each option is described below. If you are already familiar with these options you may obtain the ordering information directly from the Software Options Chart. In most cases you will want to review the following descriptions to determine what options you require.

You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then you will select the materials and service options you need to utilize the product effectively.

You order the license, materials and services using order numbers of the form Qxxxx-X? "Qxxxx" refers to the specific software product, "X" is the license code or material service option and "?" is the selectable media code for machine readable materials.

Single-Use licensed software is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied in whole or in part (with the proper inclusion of DIGITAL's copyright notice and any proprietary notices on the software) for use on such CPU.

LICENSE OPTIONS**Single-Use License Option**

The Single-Use License is your right to use the software product on a single CPU and it includes your 90 day warranty.

For your first installation of this software product you must purchase as a minimum:

- Single-Use License Option, and
- Distribution and Documentation Option

The license gives you the right to use the software on a single CPU and the Distribution and Documentation Option provides the machine readable software and related documentation.

To use this software product on additional CPU's you must purchase as a minimum:

- Single Use License Option

In addition to the right to use, the license gives you the right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

MATERIALS AND SERVICE OPTIONS**Distribution and Documentation Option**

The Distribution and Documentation Option provides the software object code in binary form and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. You will also need this option to obtain revised versions of the software product when they become available.

If you prefer to receive automatic distribution of revised versions for this product, you must purchase a Software Product Service Agreement.

Software Revision Right-To-Copy Option

The Right To Copy option allows a customer with multiple CPU's to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU, then you can make copies for additional CPU's by purchasing the Right To Copy option for each additional CPU.

If you prefer to automatically obtain the right to-copy, you must purchase a Service Right to Copy for each additional CPU. This is a service added to a Software Product Service Agreement.

Documentation-Only Option

You can obtain one copy of the basic documentation by purchasing the Documentation-Only option

Installation Service Option

Installation Service includes those services provided by a DIGITAL Software Specialist to successfully install a software product. Digital's Installation Service accelerates your productive use of this product. (If Operating System parameters must be changed, system regeneration may not be included in the Installation Service.)

Installation Service will be provided at no additional charge (Courtesy Installation) under the conditions described in the Installation section above.

Software Product Service Agreements

DIGITAL offers you a choice of three Software Product Service Agreements to support your software. These agreements provide a set of the following services depending on the agreement selected: remedial and maintenance service, revised versions of the software and documentation, telephone support and newsletters or dispatches containing suggested fixes for known problems.

The level of service you need depends primarily on three factors: (1) your available manpower, (2) your staff's level of expertise, and (3) the importance to you of having your system current and operating at peak efficiency. Our DIGITAL representative can help you select the service best suited to your needs. The agreement types are listed below.

DECsupport Service is designed for people requiring high availability of their system and for customers who need regular access to DIGITAL's technical expertise. It is the most comprehensive support service, offering on-site preventative maintenance and remedial support for critical problems. In addition, it also provides revised versions of the software and documentation, fast response telephone support, and newsletters or dispatches.

BASIC Service is ideal for customers who have their own technical staff but need fast answers to operational questions. The telephone support provided in this service gives you timely answers and solves most software problems. In addition, you get revised versions of the software and documentation, and newsletters or dispatches.

Self-Maintenance Service is designed for customers who require only minimal support but wish to receive revised versions of the software and documentation information from DIGITAL. In addition, the service provides newsletters or dispatches.

All agreements are available to licensed DIGITAL customers on an annual contractual basis.

The Prerequisite Software, as specified by this SPD, must have the equivalent level Software Product Service.

A variety of service options may be added to an existing Software Product Service Agreement as follows:

- Customers who want to copy the revised software received under their Software Product Service Agreement onto additional CPUs running that same product may order a Service Right to Copy for each CPU, Qxxxx-3Z.

- Customers who have a Software Product Service Agreement can obtain an additional copy of the documentation supplied under the Agreement by ordering the Documentation Update Service, Qxxxx-KZ.

Training from Educational Services

To ensure customer success with DIGITAL products, Educational Services sells training for the installation, maintenance and/or management of DIGITAL software. Course formats vary from seminars to packaged training materials that include self-paced instruction and computer-based instruction to traditional lecture/labs offered at DIGITAL's 27 worldwide training centers.

The following courses are recommended for this software product:

- Programming in FORTRAN IV (L/L) or
- FORTRAN IV (SPI)

All course schedules, availability and purchasing information is listed in the Educational Services DIGEST, a quarterly publication designed to assist customers in planning their training programs.

Professional Software Services

DIGITAL Software Specialists are available on a per call or resident contract basis to help in all phases of software development or implementation. Specialists are available to serve as technical consultants, decision support consultants or business systems analysts. Resources are available to:

- Supplement your programming staff
- Assume project management responsibility
- Develop software
- Assure successful start-up and performance with product-specific packaged services

Contact your DIGITAL representative for additional information and ordering details.

SOURCE MATERIALS OPTIONS

You can obtain optional source materials for this software product by signing DIGITAL's Software Program Sources License Agreement and then purchasing the source option(s) you want. The agreement entitles you to use the source materials at one customer facility or location which is specified in the agreement.

Most users do not require source materials. They are used primarily to make modifications to the software product. Source kits provided by DIGITAL do not necessarily contain all source files used by DIGITAL to build binary kits.

Source License and Sources Distribution Option

This option provides you with the machine-readable source code for this software product. It gives you the right to use the source code on any CPU at the facility/location specified in the agreement which has a Single Use License for the object code.

Source License and Sources Listings Option

This option provides you with listings of the source programs for this software product. It gives you the right to use the listings for any CPU at the facility/location specified in the agreement which has a Single Use License for the object code.

Chart

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g., QP230-HD = binaries on 9-track 800 BPI Magtape (NRZI)

D = 9-track 800 BPI Magtape (NRZI)
 E = RK05 Disk Cartridge
 H = RL02 Disk Cartridge
 M = 9-track 1600 BPI Magtape (PE)
 Q = RL01 Disk Cartridge

R = Microfiche
 T = RK06 Disk Cartridge
 V = RK07 Disk Cartridge
 Z = No hardware dependency

SOFTWARE OPTIONS CHART

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU	
Single-Use License	QP230-UZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QP230-HD QP230-HE QP230-HH QP230-HM QP230-HQ QP230-HT QP230-HV
Software Revision Right-To-Copy Option	QP230-HZ
Documentation Only Option	QP230-GZ
Installation Service Option	QP230-ID QP230-IE QP230-IH QP230-IM QP230-IQ QP230-IT QP230-IV
SOFTWARE PRODUCT SERVICE AGREEMENTS:	
DECsupport Service	QP230-9D QP230-9E QP230-9H QP230-9M QP230-9Q QP230-9T QP230-9V
Basic Service	QP230-8D QP230-8E QP230-8H QP230-8M QP230-8Q QP230-8T QP230-8V

SOFTWARE OPTIONS CHART (Continued)

OPTIONS	ORDER NUMBER
Self-Maintenance Service	QP230-3D QP230-3E QP230-3H QP230-3M QP230-3Q QP230-3T QP230-3V
SOURCE MATERIALS OPTIONS:	
Source License and Sources Distribution	QP230-ED QP230-EH QP230-EM QP230-EQ QP230-ET QP230-EV
Source License and Sources Listings	QP230-FR
Sources Distribution	QP230-ND QP230-NH QP230-NM QP230-NQ QP230-NT QP230-NV

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FORTTRAN IV includes a set of object modules, called the Object Time System (OTS) that is selectively linked with compiler-produced object modules to produce an executable program.

MINIMUM HARDWARE REQUIRED:

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EIS hardware is required for virtual arrays.

OPTIONAL HARDWARE:

In addition to standard hardware options, the following arithmetic hardware options are available:

- KE11-B Extended Arithmetic Element
- KEV11 Extended Arithmetic Chip

The FORTRAN IV OTS additionally supports the FP11 floating point processor.

PREREQUISITE SOFTWARE:

RSX-11M or RSX-11M-PLUS Operating System

Refer to the RSX-11M and RSX-11M-PLUS Optional Software Cross Reference Tables (20.98.xx and 20.99.xx) for the required versions.

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SOFTWARE INSTALLATION:

CUSTOMER INSTALLED

FORTTRAN IV/RSX is a software product engineered to be installed by the customer.

SUPPORT CATEGORY:

DIGITAL SUPPORTED

During the ninety (90) day period either from the date of first use by the customer or thirty (30) days after delivery (F.O.B. DIGITAL's plants), whichever occurs first, DIGITAL will provide the following standard services if the customer encounters a problem with the Software Product:

- (a) If DIGITAL also determines the problem to be a defect in the Software Product, DIGITAL will

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provide remedial service on site if necessary (1) to apply a temporary correction or make a reasonable attempt to develop an emergency bypass if the software is inoperable, and (2) assist the customer in preparing a Software Performance Report (SPR).

- (b) If customer diagnosis indicates the problem is caused by a defect in the Software Product, it may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs that are caused by defects in the current, unaltered release of the Software Product via a Newsletter. This Newsletter provides code corrections, temporary corrections, generally useful emergency bypasses and/or notice of the availability of corrected code.

Telephone support is available, at no additional charge, from the DIGITAL Telephone Support Center for a ninety (90) day period commencing either from the date of first use of this Software Product by the customer or thirty (30) days after delivery, whichever comes first.

Any Updates to the Software Product released by DIGITAL during this ninety (90) day period will be provided to the customer on DIGITAL standard distribution media as specified in this SPD.

These services will be provided in locations within the United States, except Alaska. Otherwise, service will be provided in the country of purchase. Service required because of customer use of other than the current, unaltered release of the Software Product operated in accordance with the SPD will be provided at DIGITAL's then current rates, terms and conditions.

ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the copyright notice and any proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Options with no support services are only available after the purchase of one supported license.

A single-use license only option is a license to copy the software previously obtained under license.

Sources and/or listings options are only available after the purchase of at least one supported license and after a source license agreement is in effect.

The following key (D, E, H, M, Q, R, T, V, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QP230-AD = binaries on 9-track 800 BPI Magtape (NRZI).

- D = 9-track 800 BPI Magtape (NRZI)
- E = RK05 Disk Cartridge
- H = RL02 Disk Cartridge
- M = 9-track 1600 BPI Magtape (PE)
- Q = RL01 Disk Cartridge
- R = Microfiche
- T = RK06 Disk Cartridge
- V = RK07 Disk Cartridge
- Z = No hardware dependency

QP230 -A— Single-use license, binaries, documentation, support services (media: D, H, M, Q, T, V)

QP230 -D— Single-use license only, no binaries, no documentation, no support services (media: Z)

Sources/Listings Options

QP230 -E— Sources (media: D, H, M, Q, T, V)

QP230 -F— Sources Listings (media: R)

Update/Unsupported Options

Users of FORTTRAN IV/RSX whose specified Support Category warranty has expired may order under license the following software option as an update to an earlier version. The option may also be purchased for use on a second or subsequent CPU, in conjunction with a single-use, license-only option. Options are distributed in binary form on the appropriate medium and include no installation or other services unless specifically stated.

QP230 -H— Binaries, documentation (media: D, E, H, M, Q, T, V)

QP230 -H— Right to copy for single-use (under existing license), no binaries, no documentation, no support services (media: Z)

Sources/Listings Update Options

The following options are available to licensed users as updates to sources and/or listings options. The update is distributed in source form on the appropriate medium and includes no installation or other services unless specifically stated.

QP230 -N— Sources update (media: D, H, M, Q, T, V)

Miscellaneous Options

QP230 -G— Documentation only kit (media: Z)

ADDITIONAL SERVICES:

The following post-warranty Software Product Services for this software product are available to licensed customers:

- Self-Maintenance Service
- Basic Service
- DECsupport Service

The prerequisite being the purchase of the equivalent level RSX-11M or RSX-11M-PLUS Software Product Service. Customers should contact their local DIGITAL office for additional information on the availability of these services.